Playa Air Quality Management for Alternatives

July 15, 2005

Update on AQM for Alternatives

◆ **Playa emissions**

⌘ **Memo in review; to be discussed at July 19 air quality working group meeting**

⌘ **Control approaches**

⌘ **Stabilization methods**

Approach to Playa AQM

◆ **Planning model**
  ⌘ **Owens Lake as the working model**
  ⌘ **Chemical and meteorological differences may make Salton Sea playa more stable than Owens**
  ⌘ **Nevertheless, Owens the working model**

◆ **Extent of control**
  ⌘ **AQM area: any area where no other land use is specified**
  ⌘ **100% of this exposed playa planned for control**
  ⌘ **Area intermittently exposed (e.g., surrounding the brine pond) also planned for control**

Approach to Playa AQM

◆ **Identify means of control**
  ⌘ **Screen according to performance criteria**
  ⌘ **Emphasize proven AQM methods**
  ⌘ **Flexible implementation plan to take advantage of new information**
  ⌘ **Identify key information needs**

◆ **Research and development (R&D)**
  ⌘ **Pilot projects, small-scale studies**
  ⌘ **Prove methods at Salton Sea prior to implementation**

◆ **Implementation**
  ⌘ **Avoid conflicts with program objectives**
  ⌘ **Stage in constructable phases**
  ⌘ **Monitor exposed areas as de-watering occurs**

Performance Criteria
- Extent and Effectiveness

◆ **Achieve ERP requirements and conform with applicable air quality management plans/SIPs**

◆ **Focus AQM on significant sources**

◆ **Effective in a timely manner**

◆ **Robust in response to environmental pressures**

  ⌘ **Drought and flood**

  ⌘ **Fire and frost**

  ⌘ **Plant pathogens**

  ⌘ **Playa soils, drainage, and shallow groundwater quality**

    ⌘ **Salinity, sodium, and selenium**

    ⌘ **Bearing capacity**

Performance Criteria
- Extent and Effectiveness (cont)

◆ **Proven for similar applications, confirmed during R&D, then monitored to verify**

◆ **Adapted over time as needed to achieve goals**

◆ **Refine control area through monitoring that commences upon de-watering**

Performance Criteria
- Integration with Ecosystem
Restoration Goals

◆ **Avoid creation of unacceptable human health and eco-toxicity risks**

◆ **Avoid water quality degradation**

◆ **Generate habitat or other benefits where feasible within core AQM function**

Performance Criteria
- Feasibility and Cost

◆ **Phase implementation with creation of newly exposed playa areas (constructable phases)**

◆ **Flexible design for adaptive management**

◆ **Efficiently use water and capital**

◆ **If water is required for AQM, then water supply, quality, quantity, and timing are defined and allocated in the ERP water balance for the alternative**

◆ **If vegetative, an adequate supply of planting material can be developed or purchased**

◆ **AQM design, construction, and operation in each phase builds on foundation of R&D and previous phases**

Preliminary Surface Stabilization Options Considered

◆ **Options that require water**
  ⌘ Stabilization with brine
  ⌘ Water-efficient vegetation
  ⌘ Climatic event-driven surface wetting
  ⌘ Event-driven sprinkler irrigation
  ⌘ Regular watering
  ⌘ Seasonal surface wetting
◆ **Options that require minimal water**
  ⌘ Gravel blanket
  ⌘ Chemical stabilizers
  ⌘ Tillage
  ⌘ Sand fences

AQM Options for Undeveloped Playa Areas

◆ **Temporary**
  ⌘ Sand fences
  ⌘ Chemical stabilizers
◆ **Permanent**
  ⌘ Water-efficient vegetation
  ⌘ Stabilization with brine

Stabilization of Developed Playa Areas

- ◆ Included in other infrastructure design criteria (e.g., roads)
- ◆ Built into other land use descriptions
- ◆ A wide range of AQM methods
- ◆ Consistent with SIPs

Other Stabilization Methods for Developed and Undeveloped Playa Areas

- ◆ Stable salt crust
- ◆ Control of access and traffic

Emissions Estimation and Other Focused Investigations

◆ **Selenium uptake and bioavailability by plants under irrigated playa conditions**
◆ **Crust mineralogy and response to climatic variation**
◆ **Control effectiveness response functions**
◆ **Least-cost control**
◆ **Real extent and location of emissive areas**
◆ **Uncontrolled emissions rates and air quality impacts**
◆ **Design criteria (e.g., drainability)**
◆ **Irrigation water quality management**

AQM Example: Water-Efficient Vegetation

1.0 ft ← Brackish inflow

+

Brine pond ← 0.3 ft ← Sea water

Blending, treatment, filtration, irrigation

~25% surface cover of salt- and drought-tolerant shrubs

Drainage recycle

Root zone

Drainage of shallow groundwater